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SPECIFICATION

[Electronic Version 1.2.8]

Teaching Circumference Instrument

Background of Invention

[0001] 1) Field of the invention.

[0002] The invention relates to devices, which provides a teaching method for geometric concepts relating to the circumference of a circle and for determining the value of the constant π(3.14). Across the nation, schools are going through a major reform in their math and science curriculum to bring education standards up to par. The facts show that there is an achievement gap between blacks and whites in mathematics and science. In 1999, when the latest National Assessment of Education Progress (NAEP) test was administered, large differences remained between average scores for blacks and Hispanics on the one hand, versus whites and Asians on the other. Nationally, the achievement gap did not narrow at all during the 1990s. In reading and math, gaps separating poor and minority students from others actually widened at most grade levels and remained the same or dropped only slightly at others (The Education Trust). By the end of grade 4, African American, Latino and poor students of all races are already about two years behind other students. By the time they reach grade 8, they are about three years behind. By the time they reach grade 12, if they do so at all, minority students are about four years behind other young people. The mathematics and science skills of 17-year-old African American and Latino students are similar to those of 13-year-old white students. African Americans and Latinos obtain college degrees at only half the rate of white students. The partnerships between government agency, industry, academia and private organizations are trying to address these issues along with many others. This invention provides a method for teaching the geometric concepts of a circle.

[0003] 2) Prior Art The prior art consists of teaching the theory and equations for the geometry of a circle. Lessons primarily consist of a mathematical explanation for the circumference of a circle showing that $C = \pi D$ or $C = 2\pi r$. Demonstrations might include using a string or wire and placing it around the circumference of a circle. And then measure the length of the diameter and multiply it by 3.14 showing that it is about the same length as the string or wire. The present invention, as distinguished from the prior art, provides a device that clearly demonstrates that 3.14 diameter of a circle will fit around the circumference of that circle and that 6.28 radius of a circle will fit around

the circumference of that circle. None of the prior art uses a device or tool that provides a circular ring, along with diameter bars or radius bars that will fit around the circumference showing the relationship of π and the diameter, or π and the radius to the circumference of the circle.

Summary of Invention

[0004] The present invention is designed to teach the relationship between a circle, its diameter and its radius.

[0005] One of the objectives of the present inventions is to provide a device that will bring the level of learning and understanding of the circumference of a circle to a conceptual level rather than just a fact remembering level as described in the Blooms Taxonomy.

[0006] Another objective is to clearly show that it takes 3.14 diameters to fit around the circumference of a circle by directly placing 3.14 diameters around the circumference.

[0007] Another objective is to clearly show that it takes 6.28 radius to fit around the circumference of a circle by directly placing 6.28 radius around the circumference.

[0008] Another objective is to clearly show that it takes 3.14 radius to fit half way around the circumference of a circle by directly placing 3.14 radius around half of the circumference.

[0009] Another objective is to show why π is approximately equal to 3.14.

[0010] Another objective is to clearly show that when unit diameters are placed around the circumference, the resulting angles between each diameter will be at approximately 0, 114.6, 229.2 and 343.8 degrees.

[0011] Another objective is to clearly show that when unit radius are placed around the circumference, the resulting angles between each radius will be at approximately 0, 57.3, 114.6, 171.9, 229.2, 286.5, and 343.8 degrees.

7/21/2004

Patent Application

Application #: 10/707,088
Group Art Unit # 3712
Filing Date: 11/20/2003
Examiner: Kurt Fernstrom
Title: Teaching Circumference Instrument

Amendment to Brief Description of Drawing

1) The brief description of drawing has been modified to include reference numbers that have been added to the drawing. Also included are the descriptions of what the reference number are referring to.

Note: Originals with markings are in red ink. Amendments are in Black ink.

The amendments includes no new matter that was not disclosed in the original specifications.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Gerald Bauldock

Gerald Bauldock

Brief Description of Drawings

[0012] Fig. 1 is a plan view of the invention, ~~with a full-length diameter bar and a .14 length diameter bar. Attachment pins (or any mechanism used for attachment) are located on the outer perimeter of the circle located at diameter lengths of the circle at 0, 114.6, 229.2 and 343.8 degrees.~~ including a circular ring designated by reference number 1, a rigid intersection bar representing its diameter designated by reference number 2, three full-length diameter bar designated by reference number 3, and a .14 length diameter bar designated by reference number 4.

[0013] Fig. 2 is a top view of the invention ~~Attachment pins are located at 0, 114.6, 229.2 and 343.8 degrees.~~ showing where the three full-length diameter bars designated by reference number 3, and the .14 length diameter bar designated by reference number 4 are attached around the circumference of the circle. The diameter bars are spaced between angles of 0, 114.6, 229.2, 343.8 and 360 degrees.

[0014] Fig. 3 is a plan view of the invention ~~with a full-length radius bar, a .28 length radius bar and a .14 length radius bar. Attachment pins on the outer perimeter of the circle located at radius length of the circle at 0, 57.3, 114.6, 171.9, 229.2, 286.5, and 343.8 degrees.~~ including a circular ring designated by reference number 5, a rigid intersection bar representing its radius designated by reference number 6, with six full-length radius bar designated by reference number 7, a .28 length radius bar designated by reference number 9, and a .14 length radius bar designated by reference number 8.

[0015] Fig. 4 is a top view of the invention ~~Attachment pins are located at 0, 57.3, 114.6, 171.9, 229.2, 286.5, and 343.8 degrees.~~ showing where the six full-length radius bars designated by reference number 7, and the .28 length radius bar designated by reference number 9 are attached around the circumference of the circle. The radius bars are spaced between angles of 0, 57.3, 114.6, 171.9, 229.2, 286.5, 343.8 and 360 degrees.

Brief Description of Drawings

[0012] Fig. 1 is a plan view of the invention, including a circular ring designated by reference number 1, a rigid intersection bar representing its diameter designated by reference number 2, three full-length diameter bar designated by reference number 3, and a .14 length diameter bar designated by reference number 4.

[0013] Fig. 2 is a top view of the invention showing where the three full-length diameter bars designated by reference number 3, and the .14 length diameter bar designated by reference number 4 are attached around the circumference of the circle. The diameter bars are spaced between angles of 0, 114.6, 229.2, 343.8 and 360 degrees.

[0014] Fig. 3 is a plan view of the invention including a circular ring designated by reference number 5, a rigid intersection bar representing its radius designated by reference number 6, with six full-length radius bar designated by reference number 7, a .28 length radius bar designated by reference number 9, and a .14 length radius bar designated by reference number 8.

[0015] Fig. 4 is a top view of the invention showing where the six full-length radius bars designated by reference number 7, and the .28 length radius bar designated by reference number 9 are attached around the circumference of the circle. The radius bars are spaced between angles of 0, 57.3, 114.6, 171.9, 229.2, 286.5, 343.8 and 360 degrees.

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Amendment to Detailed Description

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Gerald Bauldock

Gerald Bauldock

Detailed Description

[0016] The present invention relates to a device designed to teach the relationship between a circle, its diameter and its radius.

[0017] Referring to Fig 1, the device includes a circular ring ~~that has a rigid intersecting bar representing its diameter.~~ designated by reference number 1, that has a rigid intersecting bar representing its diameter designated by reference number 2. The intersecting bar has marked off units dividing the bar into segments. The ring also has marked off units around the 360 degrees of the circle. ~~Attachment pins (or any mechanism used for attachment) are located on the outer perimeter of the ring located at diameter lengths of the circle at 0, 114.6, 229.2 and 343.8 degrees.~~ Flexible bars, the same size as the diameter, designated by reference number 3 are available to attach ~~to~~ around the outer perimeter by way of an attachment ~~pins~~ mechanism. An additional flexible bar is available at .14 diameters in length designated by reference number 4. When the flexible diameter bars are attached to the circular ring, three diameter bars and one .14 diameter bar are affixed to the ring representing 3.14 diameters.

[0018] Referring to Fig 3, the circular ring designated by reference number 5, now has a rigid intersecting bar representing its diameter and showing the radius of the circle designated by reference number 6. The intersecting bar has marked off units dividing the radius into segments. ~~The ring now has attachment pins on the outer perimeter of the ring located at radius length of the circle at 0, 57.3, 114.6, 171.9, 229.2, 286.5, and 343.8 degrees.~~ Flexible bars the same size as the radius designated by reference number 7, are available to attach to the outer perimeter by way of an attachment ~~pins~~ mechanism. An additional flexible bar is available at .28 radiuses in length designated by reference number 9. When the flexible radius bars are attached to the circular ring, six radius bars and one .28 radius bar are affixed to the ring representing 6.28 radius.

[0019] Another additional flexible bar is available at .14 radiuses in length designated by reference number 8. When the flexible radius bars are attached to half of the circular ring, three radius bars and one .14 radius bar are affixed to the ring representing 3.14 radius.

[0020] Classroom activities can be developed using the present invention that will increase the level of understanding of the circumference of a circle and the value of π (3.14). By attaching three diameter bars and one .14 diameter bar around the circumference of the ring, students can immediately see and understand the equation, circumference = 3.14 diameters ($C = \pi D$). And it becomes clear why $\pi = 3.14$.

[0021] By attaching six radius bars and one .28 radius bar around the circumference of the ring, students can immediately see and understand the equation, circumference = 6.28 radius. Or written another way, circumference = 2 x 3.14 radius ($C = 2 \pi r$).

[0022] By attaching three radius bars and one .14 radius bar around half of the ring, students can immediately see and understand that half of the circumference = 3.14 radius ($1/2 \times C = \pi r$).

[0023] Participating in these activities brings the level of learning and understanding of the circumference of a circle to a conceptual level rather than just a fact remembering level as described in the Blooms Taxonomy.

Detailed Description

[0016] The present invention relates to a device designed to teach the relationship between a circle, its diameter and its radius.

[0017] Referring to Fig 1, the device includes a circular ring designated by reference number 1, that has a rigid intersecting bar representing its diameter designated by reference number 2. The intersecting bar has marked off units dividing the bar into segments. The ring also has marked off units around the 360 degrees of the circle. Flexible bars the same size as the diameter designated by reference number 3 are available to attach around the outer perimeter by way of an attachment mechanism. An additional flexible bar is available at .14 diameters in length designated by reference number 4. When the flexible diameter bars are attached to the circular ring, three diameter bars and one .14 diameter bar are affixed to the ring representing 3.14 diameters.

[0018] Referring to Fig 3, the circular ring designated by reference number 5, now has a rigid intersecting bar representing its diameter and showing the radius of the circle designated by reference number 6. The intersecting bar has marked off units dividing the radius into segments. Flexible bars the same size as the radius designated by reference number 7, are available to attach to the outer perimeter by way of an attachment mechanism. An additional flexible bar is available at .28 radiuses in length designated by reference number 9. When the flexible radius bars are attached to the circular ring, six radius bars and one .28 radius bar are affixed to the ring representing 6.28 radius.

[0019] Another additional flexible bar is available at .14 radiuses in length designated by reference number 8. When the flexible radius bars are attached to half of the circular ring, three radius bars and one .14 radius bar are affixed to the ring representing 3.14 radius.

[0020] Classroom activities can be developed using the present invention that will increase the level of understanding of the circumference of a circle and the value of π (3.14). By attaching three diameter bars and one .14 diameter bar around the circumference of the ring, students can immediately see and understand the equation, circumference = 3.14 diameters ($C = \pi D$). And it becomes clear why $\pi = 3.14$.

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